

Notice of Allowability

Application No.

10/644,764

Examiner

James D. Stein

Applicant(s)

KOYAMA, TOMOKO

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to application filed 08/19/2003.
2. ☒ The allowed claim(s) is/are 1-21.
3. ☒ The drawings filed on 19 August 2003 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 0803
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


AKM ENAYET ULLAH
PRIMARY EXAMINER

DETAILED ACTION

Allowable Subject Matter

Claims 1-21 are allowed.

The following is an examiner's statement of reasons for allowance:

Although the prior art does teach various types photonic crystal switches, none of the cited prior art discloses or suggests a stacked planar photonic crystal arrangement, where a first point defect in one light guiding layer of the crystal structure captures light of a specific wavelength and emits it; and a second point defect in a second light-guiding layer captures the light emitted by the first point defect. The photonic crystal arrangement further comprising a phase control area for the first and/or second layers, which controls the phase of light passing through the respective layer. In this manner, the device functions as a wavelength-division multiplexer wherein light of different wavelengths is multiplexed by point defects in the first substrate layer and subsequently received by point defects in additional substrate layers; each specific wavelength being captured and transmitted to a distinct substrate layer within the photonic crystal device. The captured light is subsequently phase-shifted to account for path length differences.

Furthermore, the most relevant prior art, such as [USPAT 6,738,551] Noda et al, discloses using a point defect to capture a specific wavelength of light in a 2-dimensional photonic crystal substrate layer and subsequently emit the light in a direction perpendicular to that of the substrate plane. Noda teaches said emitted light to be coupled into waveguides or incident on photodetectors so as to create a corresponding electrical signal. However, Noda et al

do not disclose a stacked 3-dimensional layered device where the light of specific wavelengths emitted by the point defects is subsequently captured by point defects in an additional substrate layers; nor does Noda disclose phase-control regions within the substrate layers that control the phase of the light passing through said substrate layers. It is the opinion of the examiner that the additional subject material disclosed by applicant is not taught or rendered obvious by the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. [USPAT 6,738,551] Noda et al, [USPUB 20040062505] to Sugitatsu et al, and [USPUB 20040179803] to Bourelle, which disclose related photonic crystal device with light capture by point defect regions.

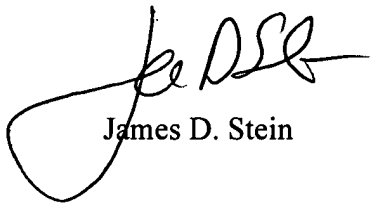
The prior art submitted by applicant on the Information Disclosure Statement (PTO-1449) has been considered by the examiner.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James D. Stein whose telephone number is (571) 272-2132. The examiner can normally be reached on M-F (8:00am-4:30pm).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



James D. Stein



AKM ENAYET ULLAH
PRIMARY EXAMINER